

MANUFACTURING OF COST EFFICIENT SANITARY NAPKINS INCINERATOR MACHINE

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ABSTRACT

The problem of improper disposal of menstrual waste is a measure road block to our achieving “Swachha Bharat” missions’ goal to create a clean India. This waste is problematic for many reasons. Heaps of napkins using lots of disease causing germs pose danger. Women are certain and women's are not conscious. This system is among the very best method to dispose waste that would bleach napkin utilizing fire, without letting the procedure generated in, by the smoke established burner. This measure has to be taken to fix the issues that, usage of napkins triggers to the health and also to the environment.

KEYWORDS: *Microcontroller, Heater Coil, Relay, Buzzer, Contactor, Glass wool, Stainless Steel Metal Outer Body, Menstrual Hygiene, Sanitary Protection & Markets for Sanitary Napkins*

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INTRODUCTION

Waste disposal has become a growing problem in India, since the plastic used in sanitary napkins aren't bio-degradable and result in environmental and health dangers. The effect is more pronounced due to the methods of neighborhood set, disposal and solid waste control and transport networks in villages and the towns. Further, one big problem of sanitary waste has ever been that their categorization, i. e., while it's plastic or biomedical waste. On the other hand, the Bio-Medical Waste Management Rules suggest that products such as soiled plaster casts, dressings, cotton, traces and bedding, are waste and needs to be microwaved, autoclaved or incinerated to destroy pathogens. The absence of concern for waste control in our nation is reflected from the fact that there's not any statistics on the topic. There is barely any documentation in this region for management, and managing of waste is crucial. In accordance with the study branded 'Sanitary Protection: Each woman's wellbeing right' estimated that only 12 percent of the 335 million girls have access. Environment portal to Earth estimated each month that 432 million pads have been disposed.

Menstrual Hygiene is still one of the hardest development issues now. Do misinformation, myths and taboos produce the illusion that Pregnancy is black, gross and bizarre, but women and girls in India often lack access to substances that are sterile, and Facilities Sanitary Pads required for hygiene administration is great? Woman's Health Right", a study by AC Nielsen shows only 12 percent of India's Options like ashes fabric and husk sand. Incidents are 70 percent more prevalent among those girls. The largest barrier to employing a Sani girl state,

their loved ones can't afford to get them, 88 percent of women use sand, rags or cloth to handle their flow. This informs that huge opportunities exist in this section and the requirement is the decrease in cost.

Disposal of Used Sanitary Napkins

Sanitary napkins' use is really a severe matter. There's no method of waste management at village level in India. The dumping of napkins in rubbish isn't practiced at the villages, as menstruation is a personal problem. The puppies may dig out them, if those are buried in the ground. A belief is in certain villages, which when a snake or a dog sees the fabrics that are old and are utilized. There's difficulty of awareness, if pitched at regions of the village. The disposal of sanitary napkin remains an issue. A suggestion is, installing incinerators in colleges under the strategy. Incinerators are used in some countries, but their installation at each state could be challenging. There is a matter of proper and regular care.

What is an Incinerator?

A safe scientific process of disposal of sanitary napkins is to incinerate them to ash, in comparatively low temperatures. It aids in disposal of napkins in a sterile and scientific manner. Proposed Incinerator include, Ceramic density insulation for protection that is outside Vehicle Thermal Cut off for energy saving. It has the ability to dispose every day, 200 napkins. The estimated Cost of an Incinerator is INR 26000/-

2. LITURATURE SURVEY

Sanitary napkins are typically used by women, but an issue where disposal system do not operate effectively and affordable thought that come to every women's mind when she picks up sanitary napkin. Every month 353 million women and adolescent girls across India need to dispose their sanitary napkins.

- **Linda Scott, Paul Montgomery, Laurel Stin Fielt, Catherine Dolan, [1]** sue dops on have presented that frequently hear a public concern about providing sanitary napkins to women and adolescent girls in developing countries. We think that the effect of disposal should be weighed to aid women delay by maintaining privacy childbearing. Disposal napkins can be an issue when the community does burnt in the leaving gobs of items for children or dogs to select out.
- **Fan Bai, Xiao Hang Wang [2]**state that as utilized in systems that are bio-toilet, said composting is a technique for sanitary napkins disposal of human stool. It would be fine, if the illness might be controlled for holding nitrogen so far as possible, since the products may be proper as fertilizer. It attracts attention, particularly from regions and areas where supply of water for toilet flushing is difficult because of water deficit, it is therefore essential to biodegradation of their feces, where fecal nitrogen and organics are decomposed or changed under the action of germs.
- **Yichun YEH, Harutoshi OGAI, Ryouta YUI, Hiroshi MORITA, Yukinori TAKABAYASHI[3]**Have provided a method that disposes a germs, cryptomeria chips and ALGA, for waste reduction that a fresh disposal technique continues to be present which dispose diapers. Microorganisms alive using the cryptomeria processors have influence on the decomposition of these disposable diapers, an eco friendly disposal method which uses microorganisms in the forests to eliminate the used diapers is suggested to decrease waste. Microorganisms including cryptomeria chips have the influence upon the decomposition of the pulp. Roughly, 85.46percent of those pulps persheet is decomposed by bacteria. By utilizing nutrition, source decomposition rate of diapers may

enhance.

- **Rotary Club of Kalyan, [4]** Study investigated how girls manage waste from the light of future degradation, in the uterus. Interviews were conducted to find out the methods of waste disposal which are employed in state. Discretion and hygiene would be factors of concern in managing menstruation for girls, and too little information about menstrual disposal practices at the exterior was happened. Disposal of menstrual use through sewage systems may result in blockages of these approaches, and cause countless vinyl strips to be thrown to the sea, in which they stay indefinitely, causing observable pollution. Menstrual goods are disposed of with the vast majority of users at the simplest and most convenient manner. Percent of consumers flushed napkin in the work and home down the bathroom. The use of sanitary napkin to handle menses has led girls to eliminate the products, at the manner for them would be to spoil them. The plastic used in napkins is not damage for health, but has consequences.

The purpose of our job is to keep environment clean by means sanitary napkin disposal method, we also should provide solution to dispose sanitary napkin and steer clear of present ways of disposal such as sanitary napkins are blended with regular trash, and it isn't easy to distinguish them and remove off them. This exposes viral hauled waste into the environment, animal and public at big inducing diseases such as Hepatitis B & C. Incinerating that this napkin is the sole method of eliminating these problems, therefore installation of the system is manufactured. Scientific, sterile, a safe and quick way of disposal of sanitary napkin is disposing them in temperature to ash that is low. It helps to dispose sanitary napkin in hygienic way without generating harmful emission. This system requires less power, capacity of 60 per day.

PROPOSED SYSTEM

The block diagram consists of different component like PIC16F866A, Relay Driver, Heater, Buzzer, and LCD Display. When system is connected to AC mains i. e. 230V AC, the power supply present in the system convert that 230V AC into 5V DC. This 5V DC voltage is applied to the Microcontroller to turn it ON, since it is the basic DC voltage required for it to turn ON. Once the Microcontroller turn ON along with a system name i. e. "Sanitary Napkin Disposal System", the initial state of timer i. e. ON/OFF and temperature reading are display on LCD. As system turn ON, another power supply converts 230V AC into 12V DC which is required for the relay to turn ON, its starts heating the coil of burner. Once the required heat to burn the napkin is attained, the Microcontroller displays the message regarding the system being ready for its process. A timer is being programmed for 5min to dispose of one napkin. After the dispose, ash is produced, which is the final output we want. Once the ash is completely form, LED glows indicating that process is completed and turn of the heater and relay. Also, there is another condition such that, if we put another napkin along with the napkin under process, the sensor present there sense another napkin and automatically increments the time of the timer by 5 minutes, for which the timer is being programmed. Time goes on increasing with quantity of napkin with 5 minutes. In this way, the system works.

SYSTEM ARCHITECTURE

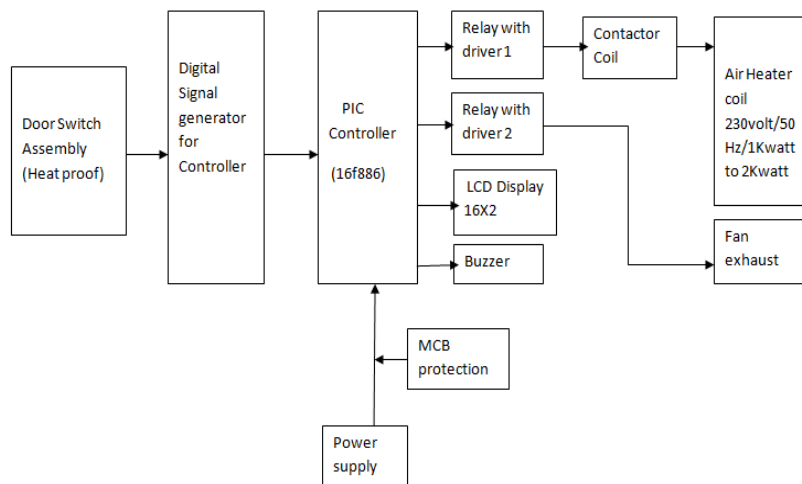


Figure 1: Block Diagram

OBJECTIVE OF THE STUDY

This study's aim is to analyze challenges and opportunities linked to wellness goods and its advertising and marketing challenges in Indian Context. Additionally, this paper examines the prospects within this section, in addition to the initiatives taken by several organizations in the Industry for creating affordability and awareness in this direction. Present Challenges in Market:

Design and Develop a Smart, Cost Effective, Efficient Sanitary Napkins Incinerator Machine which will automatically burn the sanitary napkins thrown inside the machine and Portable Sanitary Napkin Incinerator comprising a chamber, having there in, a heating unit arranged in grid fashion for supporting the sanitary napkin. The proposed work focuses on to reduce the time cycle required to burn the napkin, so as to save power and reduce production cost.

We Have Two Major Objectives for this Project

- To educate and develop awareness on utilization of Sanitary Napkins and supply accessibility by installment, straight to Sanitary Napkins Vending Machines using application in Schools and Faculties that, Girls/Women get habituated to apply this Sanitary Napkins for their health care.
- To install incinerators that will decrease spread of disease due to disposal of sanitary napkins, and to take care of the issue of sanitary napkin disposal and decrease pollution due to reduced clogging of drainage system in public.

BACKGROUND AND RELATED WORK

Waste disposal has become an issue in India, since the plastic used in sanitary napkins aren't bio-degradable and result in environmental and health dangers. The effect is more pronounced due to the methods of neighborhood set, disposal and solid waste control and transport networks in villages and the towns. Further, one big problem of sanitary waste has ever been is their categorization, i. e., while it's plastic or biomedical waste. The proposed system is to present the invention, thereby contemplates an essentially simple portable construction, adapted to be hung on any wall in a lavatory in order to conveniently, efficiently and economically dispose of sanitary napkins.

Problem Faced by Administration

- Polluted environment.
- Bad smell.
- Sanitary blockages.
- Waste of water.
- Labor problem.
- Water pollution

Problem Faced by Women

- Health problem.
- Mental stress.
- Unhygienic.
- Less attendance.
- Reduce in efficiency.
- Loss of concentration

Current User Practices & Implementation Status

- **Disposing from the Open:** The use of sanitary napkins is dependent upon the place, where girls are disposing soiled napkins. When they aren't at home, their behavior differs; girls have a tendency to leave the napkins or the pad at dustbins without wrapping them.
- **(Disposing from the Dustbin/Garbage:** At homes, the urban ladies get rid of their insecurities from the garbage; in many instances, they wrap it and toss it, and when not at home, there's a trend of throwing the mat without wrapping it from the dustbin.

In a pilot study of 1000 girls in West Bengal, it had been found that approximately 78 percent of the women could get infected and they dispose.

- **Burning the Menstrual Squander:** from the aforementioned study it is just 2% girls, who burn off the soiled napkins. As girls must look after the disposal of pads, the burning of pads is more widespread in rural areas; whereas in most urban areas, girls forget about the outcome of disposal, as soon as it is chucked in the dustbin.
- **Utilizing incinerators or particular disposal dustbins:** a lot of schools and institutions have begun using incinerators or 'female hygiene bins' for suitable disposal of napkins. These incinerators are a bit of relief for college going girls and working women.
- **Flushing the soiled napkins:** as stated, the disposal habit varies in line with this location; in public areas, based upon the bathroom kind; such as when girls are utilizing flush toilets, they attempt to flush out the soiled napkins and if it does not get flushed, they might wrap it and toss it at the dustbins.

With some practices that were isolated, waste direction isn't implemented in line with the terms under SMW Rules, 2016. The initiatives created were for waste flow because of disposal of used napkins. No initiatives have been reported for disposal and collection of additional sanitary wastes like baby diapers, adult diapers, tampons, condoms, contraceptive sheets along with other similar wastes. It is yet to be developed in the nation by the key stakeholders, specifically Consumer, Producers and Local Police.

Why is it Necessary to Dispose of sanitary Napkins?

- If they are left in the open, they are sore sight.
- May lead transmission of infections like hepatitis B and hepatitis C.
- No danger of HIV infections.
- Will attract flies and insects

SYSTEM REQUIREMENTS SELECTION OF SOFTWARE AND LANGUAGE

Selection of Software

- Embedded C[MPLAB X]
- Express PCB

Selection of Hardware

- Power Supply
- Microcontroller [PIC16F886A]
- Contactor
- 16*2 LCD Display
- Heater
- Buzzer
- Relay Driver [ULN2803]
- Light Emitting Diode [LED]

EXPERIMENTAL SETUP

This is the experimental setup for proposed work. There is a power supply, PIC 16F886C Controller, Relay driver, Contactor, Exhaust fan and Heater.



Figure 2: Experimental Setup

RESULTS

Final in-house testing is to be done with testing program. It was observed that the system was successful in this regard. After burning of sanitary napkins, testing is done if that napkin is completely burned or not, by observing. The performance of developed incinerator machine will be done in terms of time required to burn, type of napkins, number of napkins and total cost of machine.



Figure 3: Final Manufactured Machine

Observation Table

Table 1: Reading for 300°C Temp

Voltage	Coil Rating	Current	Time	Outer Temp	Room Temp
230v	1200 watt	5 amp	8.35sec	80 °C	300 °C
230v	1800 watt	7 amp	4.10sec	110 °C	300 °C
230v	2000 watt	8 amp	2.30sec	180 °C	300 °C

Table 2: Reading for 2000 Watt Heater Coil

Time	Room Temp	Outer Temp	Current
0.10 sec	40 °C	10 °C	8.10 amp
0.50 sec	110 °C	50 °C	8.00 amp
1.00 min	180 °C	85 °C	8.00 amp
1.50 sec	220 °C	102 °C	7.30 amp
2.00 min	270 °C	135 °C	7.20 amp
2.50 sec	310 °C	150 °C	7.20 amp
3.00 sec	340 °C	180 °C	7.20 amp

From the above tables it is observe that for various heater coil rating, the time required for getting red hot is different, therefore, according to the requirement, 2000 watt heater is used and various readings are observed.

CONCLUSIONS AND FUTURE SCOPE

Women hygiene is of utmost importance and is to be taken care of. Women in India are still shy of buying napkins from medical shops and other stores and even dispose the used napkins. This issue has been addressed by fabricating incinerator machine. This project gives a solution for destroying napkin waste in a very hygienic way. This is portable system to destroy napkin waste, using Incinerator. These systems also help to achieve the “Swachha Bharat” mission and avoid the large amount of diseases. Napkin disposer too can be fabricated and integrated with the vending machine, so that dispensing and disposing can be achieved in a single unit.

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